

CLAIMS:

1. A pump **dispenser** for use with an inverted container having a **downwardly-directed neck**, the dispenser

5 including a **pump** body to be mounted recessed into the container **neck** projecting into the container interior, and a **plunger** which is reciprocable axially relative to the pump body in a pumping stroke and has a **downwardly-projecting actuating portion**;

10 the pump body including a cylinder body defining a liquid chamber and having at its top an inlet opening for admitting liquid into the liquid chamber, and the plunger carrying a **piston** which is reciprocable in the cylinder body to pump liquid in use from the liquid chamber into a discharge passage and to a discharge outlet by way of a discharge **valve**;

15 characterised by

20 an **intake conduit** arrangement connected to the cylinder body and defining an **intake conduit** extending down outside the cylinder body to connect between the inlet opening at the top of the cylinder body and an intake opening lower down, the intake opening communicating between the intake conduit and the container interior whereby in use liquid can be drawn up 25 to the inlet opening and into the liquid chamber from an intake level lower than the inlet opening.

2. A pump dispenser according to claim 1 which is a foam dispenser comprising, in addition to the liquid pump constituted by said cylinder body and piston, an air pump constituted by an air cylinder also comprised in the pump body and an air piston operated by the plunger, an air chamber being defined between the air piston and the air cylinder and an air discharge passage leading from the air chamber to said discharge outlet, the liquid discharge passage and air discharge passage meeting on the way to the discharge outlet and the resulting 10 combined discharge passage containing a permeable foam-regulating element.

3. A pump dispenser according to claim 2 in which the 15 intake conduit arrangement comprises a conduit shell that fits onto the cylinder body, defining the intake conduit by enclosing a path between itself and the cylinder body.

4. A pump dispenser according to claim 3 in which the 20 conduit shell is tubular, with a closure at its top end enclosing a top part of the intake conduit.

5. A pump dispenser according to claim 4 in which the 25 inward surface of the conduit shell has a circumferentially-localised axially-extending groove recess between fitting wall portions, defining a channel clearance providing the intake conduit.

6. A pump dispenser according to any one of claims 3 to 5 in which the lower end of the conduit shell flares outwardly at a spacing from the pump body, an intake chamber, preferably annular, is defined between the flared lower end and the pump body, and the intake opening is into the intake chamber.

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10 7. A pump dispenser according to any one of claims 2 to 6 in which the intake opening is at least as low as the seal engagement of the piston with the cylinder body, with the piston at its lowermost operational position.

15 8. A pump dispenser according to any one of claims 2 to 7 in which the intake conduit arrangement comprises an intermediate shell which fits onto the cylinder body between the cylinder body and the conduit shell.

20 9. A pump dispenser according to claim 8 in which the inner shell has a top closure portion having one or more intermediate inlet openings enabling communication between the intake conduit and the cylinder body's inlet opening, the inner shell carrying an inlet valve member acting on the one or more intermediate inlet openings.

25 10. A pump dispenser according to claim 9 in which the inlet valve member is resiliently urged to the closed position.

11. A pump dispenser according to any one of claims 2 to 9 in which the liquid cylinder and air cylinder are respectively upper and lower coaxial portions of an integrated cylinder unit comprised in the pump body, the 5 liquid cylinder having a smaller bore than the air cylinder.

12. A pump dispenser according to claim 11 in which the wall of the air cylinder has a downwardly re-entrant top portion extending around the base of the liquid cylinder to form an upwardly-open trough, and a connector of the 10 intake conduit arrangement is seated in the trough.

13. A pump dispenser according to claim 12 in which the 15 lower end of the intake conduit shell makes a sealing engagement around the trough excepting the intake opening which is defined through the lower end of the intake conduit shell.

20 14. A pump dispenser according to any one of claims 2 to 13 in which the plunger has an outer wall enclosing an interior cavity and having an air intake vent, separate 25 from the discharge passage, for entry of air to the air cylinder via the interior cavity of the plunger and an air inlet valve, and wherein the plunger outer wall has an air vent riser conduit whose entry is the external opening of the air intake vent and which extends up in

the plunger to an exit opening raised from the bottom of the interior cavity.

15. A pump dispenser according to any one of claims 2 to 5 14 in which the air piston engages the air cylinder at an air piston seal having a first, upwardly-directed sealing lip and a second, downwardly-directed sealing lip below the first sealing lip to stop liquid from getting into the air cylinder.

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16. A pump dispenser according to any one of the preceding claims in which the discharge nozzle of the pump has a closure valve comprising a wall of a resiliently flexible material having one or more slits 15 providing a discharge opening which is closed in a rest condition of the wall and opens when the pressure of product from the pump causes the wall to bulge outwardly.